



Actual Size



### Product Description

The 32S12 Series is a 32.768 kHz tuning fork-type quartz crystal mounted in a plastic-molded package.

### Product Features

- Rugged, plastic-molded design, resistant to shock and vibration
- Excellent resistance to heat shock and environmental characteristics
- Ideally suited for automated pick-and-place assembly environments
- Available on tape and reel
- Pb-free and RoHS/Green compliant

### Typical Applications

- Time of day clocks
- Reference for microprocessor's low power/standby mode

### Electrical Characteristics:

Nominal Frequency .....	32.768 kHz
Frequency Tolerance at 25°C.....	±20ppm
Turnover Temperature, T <sub>0</sub> .....	+25°C ±5°C
Temperature Coefficient, K .....	(-3.5 ±0.8) x 10 <sup>-8</sup> /°C <sup>2</sup>
Load Capacitance, C <sub>L</sub> .....	12.5pF standard
Equivalent Series Resistance, R <sub>S</sub> .....	50 k-ohm Max.
Shunt Capacitance, C <sub>0</sub> .....	1.0pF, typical
Recommended Drive Level, Pd.....	0.1μW
Maximum Drive Level, Pd <sub>MAX</sub> .....	1μW Max.
Aging, Δ F / f (1st year @ 25°C ±3°C) ...	±5ppm Max.
Operating Temperature Range.....	-40 to +85°C
Storage Temperature Range.....	-55 to +125°C

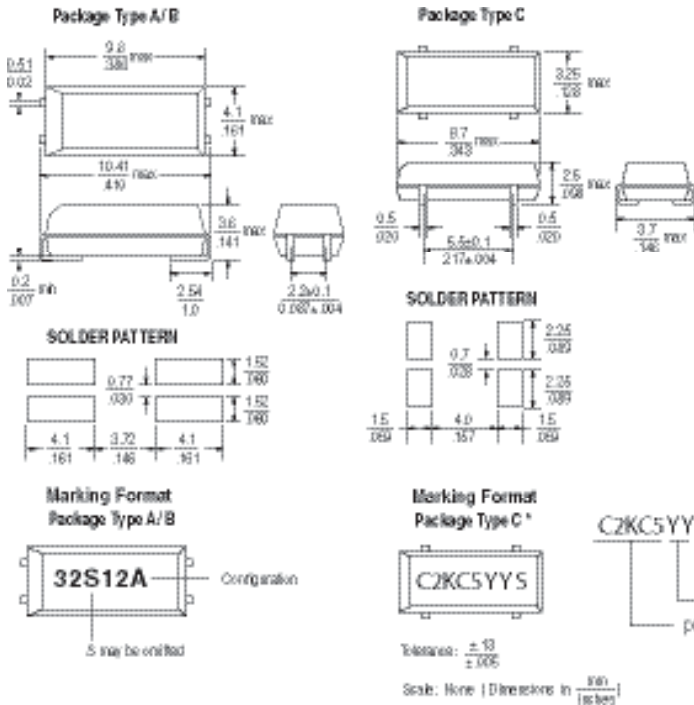
### Environmental / Process Specifications

High Temperature Storage:	Less than ±5 ppm change after 500H at 80°C
Low Temperature Storage:	Less than ±5 ppm change after 500H at -30°C
Thermal Shock:	Less than ±5 ppm change at 25°C after -25 to +80°C 20 cycles each 1 H
Shock:	MIL-STD-883, Method 2002, Condition B
Resistance to Soldering Heat:	J-STD-020C, Table 5-2, Pb-free devices (2 cycles max)
Solderability:	JESD22-B102-D, Method 2 (Preconditioning E)
Terminal Strength:	Will withstand pull weight of 500 grams, 30 seconds maximum

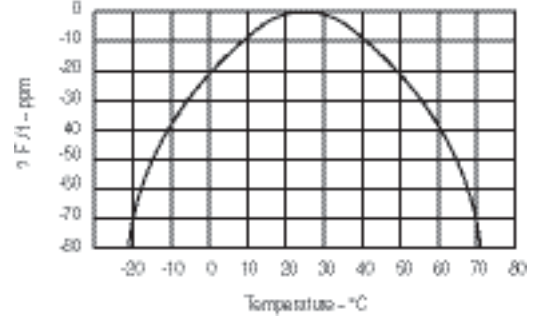
### Reflow Temperature:

260°C Max (RoHS Compliant version only)

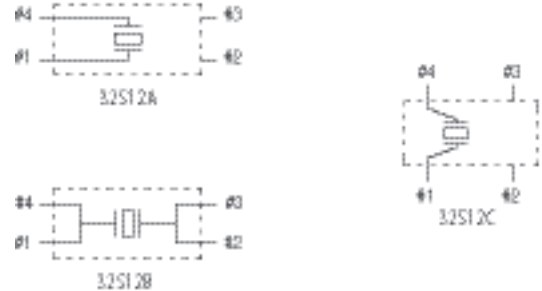
**Packaging Information:**



**Frequency vs. Temperature Characteristics**



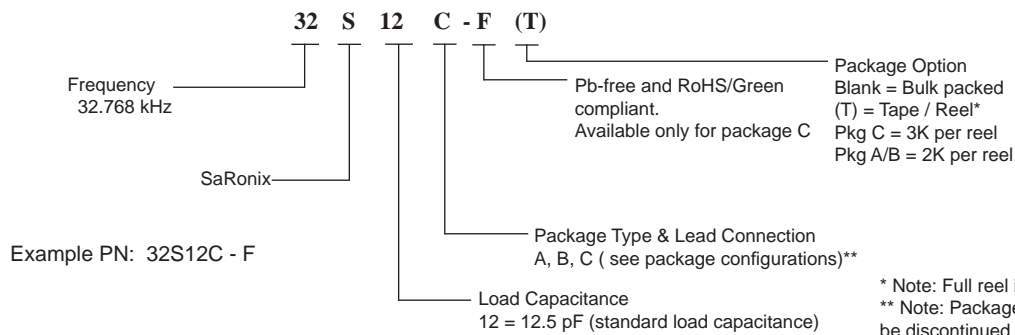
**Lead Configurations**



\* 32S12C - type package marking will be formatted as C2KC5YY5 for RoHS-compliant version. Non-compliant version is marked 32S12C

\*\*Note: for package A and C options, pins #2 and #3 provide mechanical support only. Do not connect to circuit.

**Ordering Information**



\* Note: Full reel increments only  
\*\* Note: Package A and B are scheduled to be discontinued in June 2006